

# Revision of *Rubus* subgenus *Micranthobatus* (Fritsch) Kalkman (Rosaceae) in Australia

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## Summary

Bean, A.R. (1995). Revision of *Rubus* subgenus *Micranthobatus* (Fritsch) Kalkman (Rosaceae) in Australia. *Austrobaileya* 4(3): 321–328. *Rubus* subg. *Micranthobatus* is revised for Australia. Two species are recognised; *R. moorei* F.Muell. and the new species *R. nebulosus* A.R.Bean. Both species are described, illustrated and their distributions mapped. A key to the species is provided.

Key words: *Rubus*-Australia, *Rubus nebulosus*, *Rubus moorei*, Rosaceae.

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## Introduction

*Rubus* L. is a worldwide genus with many hundreds of species. In Australia, there are just nine indigenous species belonging to this genus.

The last comprehensive treatment of Australian *Rubus* species was that of Bentham (1864). The only recent account of any *Rubus* species in Australia is that of Amor & Miles (1974) who provided an account of, and key to, the naturalised species of *Rubus* subg. *Rubus* occurring in Victoria. However, recent treatments are available for areas north of Australia. The New Guinea species of *Rubus* were revised by Royen (1969) and *Rubus* species occurring throughout Malesia have since been revised (Zandee & Kalkman 1981; Kalkman 1984; Kalkman 1987).

The indigenous Australian *Rubus* species belong to four subgenera, three of which (*R.* subg. *Idaeobatus* (Focke) Focke, *R.* subg. *Malachobatus* (Focke) Focke and *R.* subg. *Dalibarda* (L.) Focke) were established by Focke (1910) in the first part of his world-wide monograph of the genus *Rubus*. The fourth, *R.* subg. *Micranthobatus*, was treated by Focke as a section of *Rubus*, but this was later raised to subgeneric rank by Kalkman (1987). He recognised about 12 species as belonging to it. These species occur in Madagascar, north-east

India, Borneo, Philippines, Celebes, New Guinea, Australia and New Zealand.

Australian members of *R.* subg. *Micranthobatus* are distinguishable from other Australian *Rubus* species by their long, trailing stems which often carry them into tree canopies, palmate foliage, dioecious habit and axillary inflorescences.

There are two taxa in Australia belonging to this subgenus, but only one (*R. moorei* F.Muell.) has hitherto been named at species level. The other taxon, described here as *R. nebulosus*, was named by White (1942) as *R. moorei* f. *glabra*. He recognized the distinctiveness of this taxon, but was confused by so-called 'intermediate forms', and labelled some specimens at BRI as such. These specimens represent juvenile forms of *R. moorei* which in its young stage has larger, sparsely hairy leaves. Kalkman (1987) recognised that there were two distinct taxa belonging to this subgenus in Australia, but was inclined to include 'f. *glabra*' (i.e. *R. nebulosus*) within *R. royenii* from New Guinea. Several characters separate *R. nebulosus* from both *R. moorei* and *R. royenii* and hence it is described here at species level.

This paper is the first of a series in which it is intended to revise Australian members of the genus *Rubus*.

**Taxonomy**

**Rubus** subg. **Micranthobatus** (Fritsch)  
Kalkman, Blumea 32: 324 (1987); *Rubus*  
sect. *Micranthobatus* Fritsch, Oesterr. Bot.  
Z. 36: 259 (1886).

Lectotype: *Rubus moorei* F.Muell., fide  
Kalkman (1987).

12 species in the world, 2 endemic in Australia.

**Key to the Australian species of *Rubus* subg. *Micranthobatus***

1. Undersides of leaflets densely hairy throughout; margins with 5–7 teeth/cm; stipules present; carpels not glandular; aggregate fruits with 16–30 hairy carpids ..... **R. moorei**

Undersides of leaflets glabrous except for domatia and hairs along veins; margins with 3–5 teeth/cm; stipules absent; carpels glandular; aggregate fruits with 35–65 glabrous carpids ..... **R. nebulosus**

- 1. *Rubus moorei*** F.Muell., Trans. Phil. Inst. Vict. 2: 67 (1857); *R. moorei* F.Muell. var. *moorei*, Domin, Repert. Spec. Nov. Regni Veg. 12: 133 (1913); *R. moorei* var. *typica* Domin, Biblioth. Bot. 89: 174 (1928), nom. inval.; *R. moorei* F.Muell. f. *moorei*, C.T.White, Proc. Roy. Soc. Queensland 53: 215 (1942); *R. moorei* f. *sericea* C.T.White, Proc. Roy. Soc. Queensland 53: 215 (1942), nom. inval. **Type:** New South Wales. North Coast: Clarence River, *C. Moore* (holo: MEL [MEL31333]; iso: K [photo BRI]).

*Rubus moorei* var. *leichhardtianus* Domin, Repert. Spec. Nov. Regni Veg. 12: 133 (1913). **Type:** [Queensland]. From the creek brush near Mr Archer's station, [Sep 1843], *Leichhardt* s.n. (iso: MEL [MEL 31338]; K [photo BRI]).

*Rubus moorei* var. *tryonii* Shirley, Proc. Roy. Soc. Queensland 31: 26 (1920) ('tryoni'). **Type:** Queensland. MORETON DISTRICT: National Park, Macpherson Range, Dec 1916–Jan 1917, *J. Shirley*, n.v.

**Illustrations:** K.A.W. Williams, Native Pl. Queensl. 3: 275 (1987); D.L. Jones & B. Gray, Climbing Pl. in Austral. (1988: 332) - photograph of fruiting specimen only.

Diocious climbing vine to 15 m long or high. New growth and mature stems densely hairy,

with numerous curved prickles 1–1.5 mm long; glands absent. Leaves petiolate, palmate, 5-foliolate, rarely 3- or 4-foliolate; stipules present, linear, 10–16 × 0.8–1 mm, sparsely hairy, attached in pairs 4–5 mm above base of petiole. Petioles 3.5–6.5 cm long, with numerous curved prickles. Petiolule of terminal leaflet 2.2–3.7 cm long, with numerous curved prickles; petiolule of lowest two leaflets 0.3–0.7 cm, with prickles rare or absent. Petioles and petiolules with fine appressed hairs, eglandular, terete. Laminae ovate with length/breadth ratio 1.6–1.9, chartaceous, upper surface sparsely hairy, particularly on major veins, glabrescent; lower surface densely covered by simple, rusty coloured hairs; venation penninerved, with 9–11 pairs of lateral veins unbranched or sometimes branching towards margin; midrib and lateral veins strongly impressed above, prominently raised below; apex acute; base obtuse; margins irregularly dentate, with 5–7 teeth per cm; teeth 1–1.5 mm long; terminal leaflet 4.5–7.6 × 2.5–4.1 cm; lateral leaflets slightly smaller. Inflorescences 1–3 in the axils of leaves, racemose, with numerous sterile bracts at base; racemes 4–7(10) cm long, with up to 15 flowers; rachis and pedicels densely hairy, with small curved prickles; pedicels 7–26 mm long; bracts 1 per pedicel, ovate, 4–7.5 × 2–3 mm, cymbiform, with apex acute; bracteoles 2, towards base of pedicel, not opposite, 4.5–5 × 1.5 mm, with apex acute; bracts and bracteoles persistent, with dense appressed hairs outside,

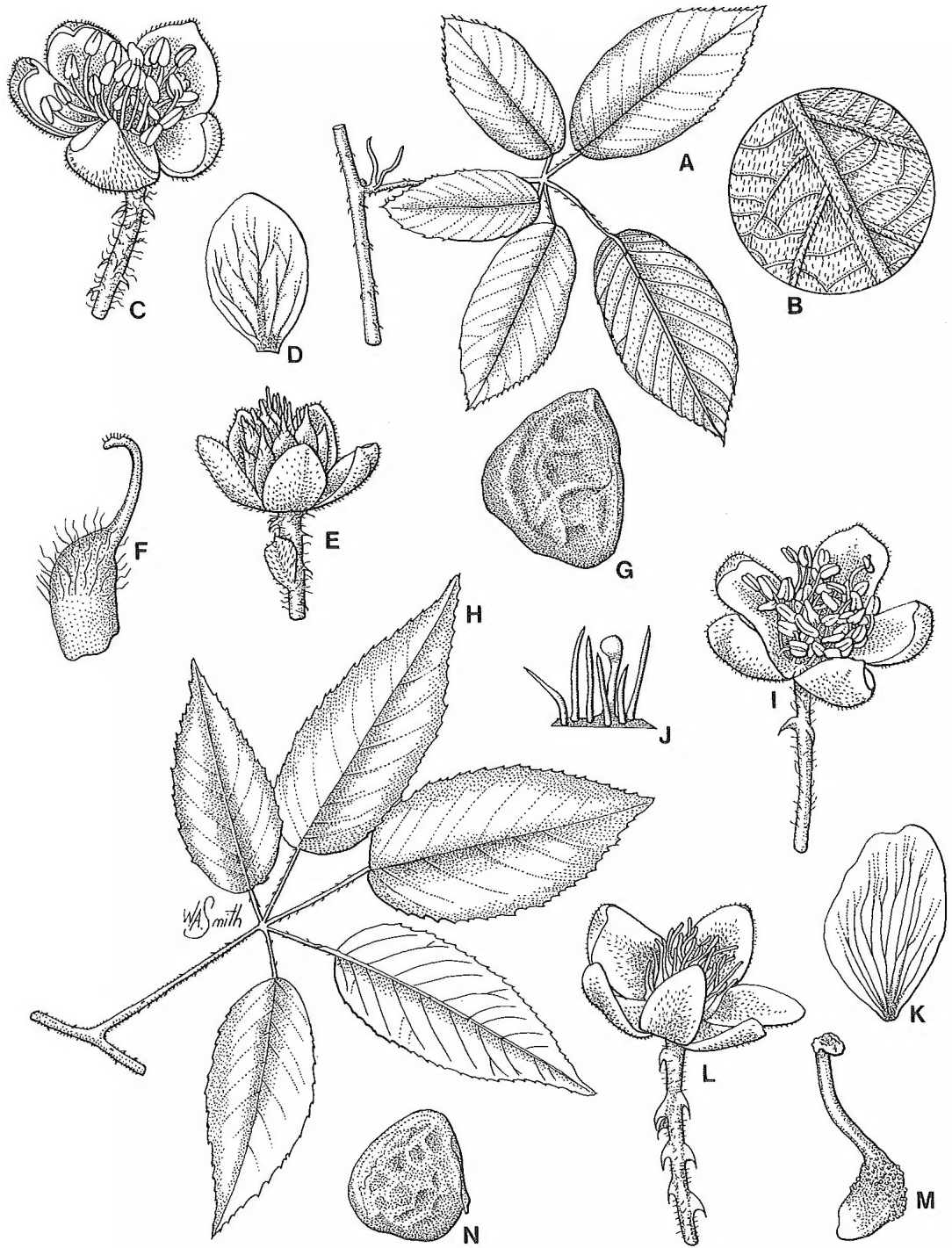


Fig. 1. A–G. *Rubus moorei* A. leaf and stem  $\times 0.6$ . B. underside of leaflet  $\times 3$ . C. male flower with petals removed  $\times 3$ . D. petal  $\times 3$ . E. female flower  $\times 3$ . F. carpel  $\times 12$ . G. endocarpid  $\times 6$ . H–N *Rubus nebulosus* H. leaf and stem  $\times 0.6$ . I. male flower with petals removed  $\times 3$ . J. simple and glandular hairs on sepal  $\times 4$ . K. petal  $\times 3$ . L. female flower  $\times 3$ . M. carpel  $\times 12$ . N. endocarpid  $\times 6$ . A–B, Bean 2693 (BRI); C–D, Anon., Lismore, 1907 (MEL); E–F, Groyther s.n. (BRI); G, Bean 1314 (BRI); H, Bean 7186 (BRI); I–K, Beckler s.n. (MEL); L–M, Fletcher s.n. (NSW); N, Constable s.n. (NSW).

sparsely hairy or glabrous inside, eglandular. Flowers functionally unisexual. Female flowers bearing staminal vestigia, male flowers bearing hairy rudimentary carpels. Hypanthium shallowly campanulate, 3.5–4 mm across, densely hairy outside, usually with curved prickles. Sepals 5, persistent, ovate, 3.5–6 × 3–4.5 mm, with apex obtuse, and margins entire, hairy on both surfaces, outer surface sometimes with prickles; petals 5, not persistent, white, elliptical, 8–9 × 4.5–5 mm, gradually tapering at base, very narrow at point of attachment, with apex obtuse, and margins entire, glabrous except for sparse hairs near base, venation prominent. Stamens 40–50, glabrous, in 2 or 3 whorls, evenly distributed; filaments terete, 2.5–3.5 mm long; anthers c. 1.5 mm long, dorsifixed, versatile, bilocular. Carpels c. 40, densely hairy, eglandular. Styles terete, c. 1 mm long, glabrous or sparsely hairy; stigma spatulate, papillose, set at an oblique angle to style. Aggregate fruit fleshy, black when ripe, to 18 × 17 mm when fresh, to 14 × 12 mm when dry, consisting of 16–30 hairy carpids. Endocarpids biconvex, deltate in outline, c. 4.5 mm long, c. 3.5 mm wide, c. 2 mm thick, surface with numerous shallow depressions, and with rounded or obscure dorsal wing; hilum lateral. **Fig. 1, A–G.**

**Selected specimens:** Queensland. WIDE BAY DISTRICT: Peters Logging Area, Conondale Ranges, 26°41'S 152°34'E, Nov 1990, *Bean* 2693 (BRI,L,MEL); Blackall Range, Sep 1918, *White* s.n. (BRI); Mary Cairncross Park, Maleny, Apr 1993, *Bean* 6020 (BRI). MORETON DISTRICT: from the creekbrush, Mr Archer's [station], Sep 1843, *Leichhardt* s.n. (MEL); Candle Mountain, May 1918, *White* s.n. (BRI); Tallebudgera, 1902, *Groither* s.n. (BRI); O'Reillys Guest House, Lamington Plateau, Jan 1990, *Bean* 1314 (BRI,L,LAE,QRS); sources of the Tweed and Logan rivers, 1895, *Collins & Taylor* s.n. (MEL); Beechmont, Sep 1920, *White* 6180 (MEL); Springbrook, Repeater Station road, Dec 1993, *Bean* 7183 (BRI,MEL); Qld/NSW border, Levers Plateau, Oct 1993, *Grimshaw* G86 (BRI). New South Wales. NORTH COAST: Tweed Range, Mebbin S.F., 7 mls [11 km] SW of Tyalgum, Jun 1957, *Johnson & Constable* s.n. (NSW); Sheepstation Creek, Wiangaree SF, NE of Kyogle, Dec 1972, *Williams* s.n. (NE); Wiangaree State Forest, Jan 1981, *Bird* s.n. (BRI); summit of Mt Nardi, NE of Nimbin, Sep 1994, *Bean* 7934 (BRI,K,NSW); near Lismore, Sep 1926, *Cheel* s.n. (NSW); Lismore, Nov 1906, *Rothwell* s.n. (NSW); Booyong Flora reserve, ENE of Lismore, Sep 1994, *Bean* 7911 (BRI,MEL,NSW); Byron Creek, Booyong, Jun 1957, *Johnson & Constable* s.n. (NSW).

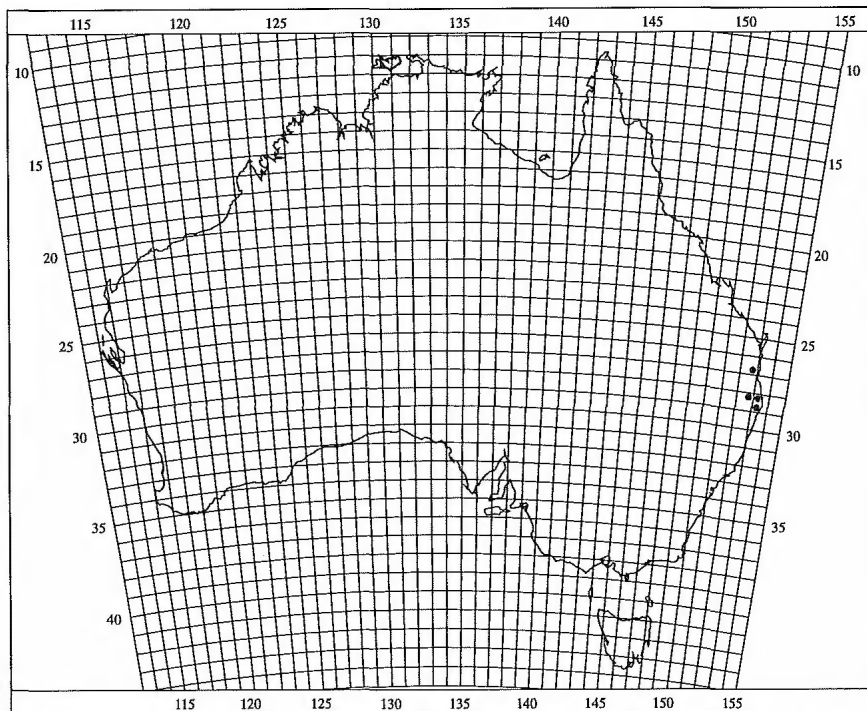
**Distribution and habitat:** *Rubus moorei* has a restricted distribution in eastern Australia, with two areas of occurrence; one being about 100 km north of Brisbane (the Conondale Range and Blackall Range), and the other being from Lamington National Park, Queensland, to the Lismore area in northern New South Wales (**Map 1**). The type locality is recorded as 'Clarence River' but no other collections I have seen have ever been made from within the catchment of the Clarence River. *R. moorei* grows in subtropical to warm-temperate notophyll rainforest or on rainforest margins, associated with species such as *Duboisia myoporoides* R.Br., *Stenocarpus sinuatus* Endl., *Castanospora alphanthii* (F.Muell.) F.Muell. and *Quintinia verdonii* F.Muell., in areas where the annual rainfall exceeds about 1800 mm. It most commonly occurs at altitudes above 500 metres but around Lismore, it descends almost to sea-level.

**Phenology:** Flowers have been recorded from September to January; fruits from October to January.

**Affinities:** *R. moorei* is somewhat similar to *R. novoguineensis* Merr. & Perry, but differs from that by its persistent stipules, and flowers with glabrous stamens and eglandular carpels. The similar *R. australis* G.Forst. and other New Zealand *Rubus* species have glabrate leaves, paniculate inflorescences and smaller, yellow fruits. *R. moorei* differs from *R. nebulosus* by the presence of stipules; its broader, densely hairy leaflets, with acute apex and greater number of marginal teeth; mostly shorter racemes, larger endocarpids and eglandular carpels.

**Typification:** No type specimen for *Rubus moorei* var. *tryonii* Shirley can be found at BRI, MEL, or NSW. However, because the brief diagnosis does not indicate that the leaves are glabrous or glabrescent, I believe this name to be synonymous with *R. moorei*.

**Conservation Status:** Although *R. moorei* is now very rare on the Blackall Range and is not common in the Conondale Range, it is common and well conserved in Lamington National Park in Queensland and Nightcap National Park in New South Wales. Hence no conservation coding is recommended.



Map 1. Distribution of *Rubus moorei*.

**2. *Rubus nebulosus* A.R.Bean sp. nov.** affinis

*R. royenii* var. *royenii* a quo foliolis angustioribus, praesentia domatiorum, petalis multis majoribus et numero staminum stylorumque in quoque flore majore differt. **Typus:** New South Wales. North Coast: Coramba, November 1912, *Boorman* s.n. (holo: BRI; iso: NSW).

*Rubus moorei* f. *glabra* C.T.White, Proc. Roy. Soc. Queensland 53: 215 (1942). **Type:** New South Wales. North Coast: Dorrigo State Forest, 4 October 1930, *C.T. White* 7542 (holo: BRI).

*Rubus* sp. A, Harden (ed.), Flora of New South Wales, 1: 533 (1990).

**Illustrations:** D.L. Jones & B. Gray, Climbing Pl. in Austral. (1988: 332) - photograph of flowering specimen only, as *Rubus moorei*; N. & H. Nicholson, Austral. Rainforest Pl. IV (1994: 61), as *Rubus* sp. A.

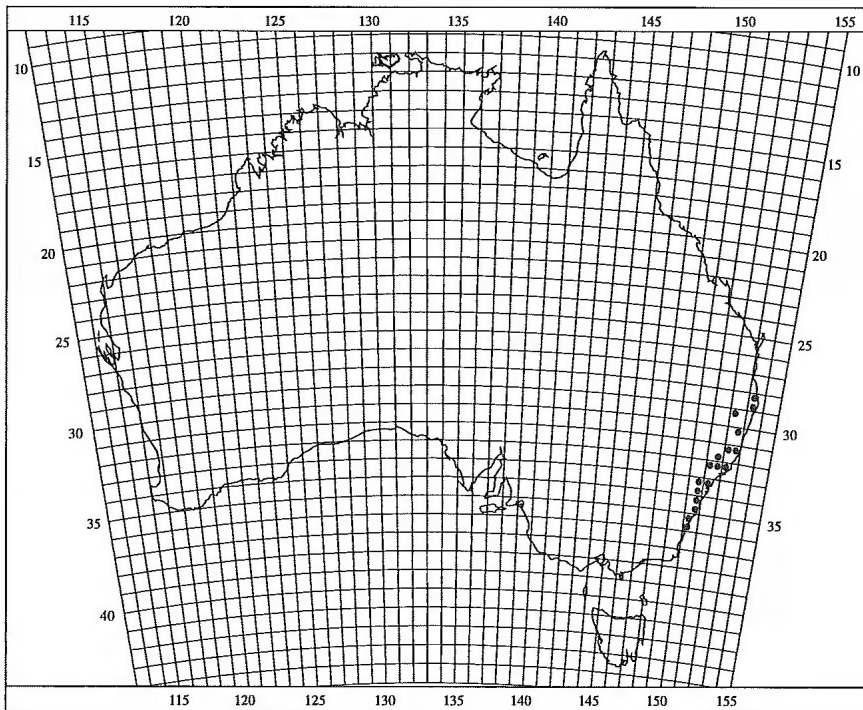
Diocious climbing vine to 15 m long or high. New growth with sparse, simple, appressed,

pale yellow hairs. Mature stems glabrous, with numerous curved prickles 1–1.8 mm long; glands absent. Leaves petiolate, palmate, usually 5-foliolate, rarely 4- or 6-foliolate; stipules absent. Petioles 4.5–8.5 cm long, terete or flattened near base, with numerous curved prickles. Petiolule of terminal leaflet 3.0–5.7 cm long, terete, with numerous curved prickles; petiolule of lowest two leaflets 0.7–1.2 cm, terete, prickles rare or absent. Petioles and petiolules sparsely hairy, eglandular. Laminae ovate to elliptical, with length/breadth ratio 2.1–2.9, chartaceous, glabrous throughout except for midrib and major veins, and hairy domatia in major vein angles on lower surface; venation penninerved, with 10–13 pairs of lateral veins branching towards margin; midrib only impressed above; midrib and major veins prominent below; apex acuminate; base obtuse or slightly cordate, margins irregularly dentate, with 3–5 teeth per cm; teeth 1–1.5 mm long; terminal leaflets 6.3–11.5 × 2.6–5.3 cm; lateral leaflets somewhat smaller. Inflorescences 1 or 2 in the axils of leaves, racemose, with numerous sterile bracts at base; racemes 5–12 cm long,

with up to 12 flowers; rachis and pedicels densely hairy, with small curved prickles, with numerous stalked glands or rarely glands absent; pedicels 9–23 mm long; bracts 1 per pedicel, ovate,  $5.5\text{--}6 \times 2\text{--}3$  mm, cymbiform, with apex acute; bracteoles 2, towards base of pedicel, not opposite,  $3\text{--}5 \times 0.6\text{--}0.8$  mm, apex acute; bracts and bracteoles persistent, with dense appressed hairs on both surfaces, with stalked glands or rarely glands absent. Flowers functionally unisexual. Female flowers bearing staminal vestigia, male flowers bearing glabrous rudimentary carpels. Hypanthium shallowly campanulate, c. 4 mm across, densely hairy outside, usually with curved prickles. Sepals 5, persistent, ovate,  $3.5\text{--}4 \times 3\text{--}3.5$  mm, with apex obtuse, and margins entire, hairy on both surfaces; petals 5, not persistent, white, elliptical,  $9\text{--}12 \times 5\text{--}7$  mm, gradually tapering at base, very narrow at point of attachment, with apex obtuse, and margins entire, glabrous except for sparse hairs near base, with venation prominent. Stamens 45–60, glabrous, in 2 or 3 whorls, more or less evenly distributed; filaments terete, 2.5–3 mm long; anthers c. 1.5

mm long; dorsifixed, versatile, bilocular. Carpels 60–80, glabrous or with sparse erect hairs, and with numerous sessile or shortly stalked glands. Styles 2.0–2.5 mm long, glabrous; stigma spatulate, papillose, set at an oblique angle to style. Aggregate fruit fleshy, red to black when ripe, of unknown size when fresh, up to  $11 \times 9$  mm when dry, consisting of 35–65 glabrous carpels. Endocarpids biconvex, circular in outline, c. 3.2 mm in diameter, c. 1.5 mm thick, surface with numerous deep depressions, and with a rudimentary annular wing; hilum lateral. **Fig. 1, H–N.**

**Selected specimens:** Queensland. MORETON DISTRICT: Springbrook, Repeater Station road, Dec 1993, *Bean* 7186 (BRI,MEL,NSW); Springbrook, Macpherson Range, Jan 1916, *White* s.n. (BRI); near O'Reilleys Guest House, Lamington Plateau, Jan 1990, *Bean* 1313 (BRI). New South Wales. NORTH COAST: summit of Mt Nardi, NE of Nimbin, Oct 1994, *Bean* 7960 (BRI,K,L,MEL,MO,NSW); Brummies Lookout, SE of Tyalgum, Jul 1993, *Bean* 6218 (BRI); Tungun road, Whian Whian S.F., N of Lismore, Sep 1994, *Bean* 7926 (BRI); Gibraltar Range, 42 mls [67 km] NE of Glen Innes, Nov 1970, *Williams* s.n. (NE); about 6 mls [10 km] along Douglas R. Road about 48 mls [77 km] W of Wingham, Oct 1951, *Garden* s.n. (NSW); Tinebank Preserve, Mt Boss SF, c. 32 km NNW of Wauchope, Nov



Map 2. Distribution of *Rubus nebulosus*.

1980, *Coveny* 10856 (K n.v., NSW); Myall River SF, 5 mls [8 km] W of Bulahdelah, Oct 1956, *Constable* s.n. (NSW). NORTHERN TABLELANDS: Carters Brush Trail, W base of Mt Paterson, Barrington Tops NP, May 1986, *Rodd* 5533 *et al.* (NSW); N part of Carabeen Walking track, Werrikimbee N.P., Oct 1991, *Hosking* 398 (NSW). CENTRAL COAST: Gosford, Nov 1897, *Boorman* s.n. (NSW); Brisbane Water, s.d., *Moore* s.n. (MEL); Otford, Oct 1897, *Camfield* s.n. (NSW); Minnamurra Falls Reserve, 3 mls [5 km] W of Jamberoo, Feb 1959, *Constable* s.n. (NSW); Whispering Gallery, 5 km SE of Albion Park, Nov 1977, *Coveny* 9777 (NSW). CENTRAL TABLELANDS: Robertson Nature Reserve, May 1978, *Coveny* 10176 & Griffiths (NSW); Burrawang, Nov 1888, *Fletcher* s.n. (NSW). SOUTH COAST: Milton, Dec 1902, *Cambage* s.n. (NSW); 1.5 km W of Termeil, 35°29'S 150°19'E, Nov 1988, *Telford* 10749 (BISH n.v., CBG n.v., MEL); Pebbly Beach, between Kioloa and Durras Water, Sep 1960, *Johnson & Constable* s.n. (NSW).

**Distribution and habitat:** *Rubus nebulosus* has a broad distribution mainly in New South Wales. It extends from Springbrook and Lamington National Park in the extreme south-east of Queensland to near Batemans Bay on the south coast of New South Wales (Map 2). *R. nebulosus* grows in subtropical or warm-temperate notophyll rainforest or tall eucalypt forest adjacent to rainforest, in high rainfall areas near the coast. Commonly associated species include *Caldcluvia paniculosa* (F. Muell.) Hoogland, *Doryphora sassafras* Endl., *Ceratopetalum apetalum* D. Don and *Cyathea leichhardtiana* (F. Muell.) Copel. In the northern parts of its range, it is confined to altitudes above c. 500 metres, but further south it approaches sea-level.

**Phenology:** Flowers have been recorded from August to January; fruits from November to February.

**Affinities:** *R. nebulosus* is perhaps closest to *R. royenii* Kalkman var. *royenii*, a New Guinea taxon, but differs by its narrower leaflets, presence of domatia, 1 or 2 inflorescences per leaf axil (2–5 for *R. royenii* var. *royenii*), much larger petals, and the greater number of stamens and styles per flower.

**Note:** While *R. nebulosus* and *R. moorei* sometimes grow in close proximity to each other, hybrids between the species are not known. Field observations are that *R. moorei* flowers about one month earlier than associated plants of *R. nebulosus*.

**Conservation Status:** Although *R. nebulosus* is rare in Queensland, it is widespread in New South Wales and present in several conservation reserves. Hence no conservation coding is recommended.

**Etymology:** The specific epithet is derived from Latin *nebulosus*, meaning misty, in reference to the habitat occupied by this species, which is often enshrouded in cloud and mist.

### Excluded Name

*Rubus australis* G. Forst., Fl. ins. austr. p. 40 (1786).

*R. australis* was recorded for Australia without reference by Gray (1856), and the name subsequently duly included by Chapman (1991). However, this record is clearly erroneous as *R. australis* is considered endemic to New Zealand, and the name is thus not applicable in Australia.

### Acknowledgements

I am grateful to the Directors of NSW, NE and MEL for the loan of specimens and/or access to their collections, to Laurie Jessup for finding and photographing types while Australian Botanical Liaison Officer at Kew, Peter Bostock for the Latin diagnosis, Will Smith for the illustrations, and Gordon Guymner for helpful comments on a draft of this paper.

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